

## AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A method, comprising:

speculating, based on a receive packet, [[that]] a connection that will subsequently have a send packet to be processed in accordance with a transmission control protocol;

dynamically calculating a time when a protocol control block, associated with the speculated connection, is to be pre-fetched from an external memory unit, wherein the time is calculated in accordance with an estimated processing time associated with the receive packet less an estimated latency time associated with pre-fetching the protocol control block from the external memory unit; and

arranging, in accordance with the dynamically calculated time, for a packet processing engine to pre-fetch from [[an]] the external memory unit [[a]] the protocol control block associated with the connection.

2-4. (Canceled)

5. (Currently Amended) The method of claim [[4]] 1 , further comprising:

dynamically adjusting, based on other packets that have been processed, at least one of:  
(i) the estimated processing time, [[and]] or (ii) the estimated latency time.

6-9. (Canceled)

10. (Currently Amended) The [[apparatus]] method of claim 1, wherein said speculating is performed by the packet processing engine.

11. (Currently Amended) The [[apparatus]] method of claim 1, wherein said speculating is performed by a host processor and said arranging comprises:

pushing the protocol control block from the external memory unit to the packet processing engine.

12. (Currently Amended) The [[apparatus]] method of claim 1, wherein the packet processing engine is associated with a network interface card.

13. (Currently Amended) [[An apparatus, comprising:

a]] A computer-readable storage medium having stored thereon instructions that when executed by a machine result in the following:

speculating, based on a receive packet, [[that]] a connection that will subsequently have a send packet to be processed in accordance with a transmission control protocol,

dynamically calculating a time when a protocol control block, associated with the speculated connection, is to be pre-fetched from an external memory unit, wherein the time is calculated in accordance with an estimated processing time associated with the receive packet less an estimated latency time associated with pre-fetching the protocol control block from the external memory unit, and

arranging, in accordance with the dynamically calculated time, for a packet processing engine to pre-fetch from ~~[[an]]~~ the external memory unit ~~[[a]]~~ the protocol control block associated with the connection.

14-23. (Canceled)

24. (Currently Amended) A system, comprising:

a host processor;

a dynamic random access memory unit; and

a network interface card, including:

a packet processing engine, and

an input path to receive from the dynamic random access memory unit a pre-fetched protocol control block for a connection predicted to subsequently have a packet to be processed by the packet processing engine in accordance with a transmission control protocol;

wherein the packet processing engine acts as a transmission control protocol offload engine for the host processor, and further wherein the packet processing engine predicts the connection and dynamically calculates a time when the protocol control block should be pre-fetched from the dynamic random access memory unit.

25-28. (Canceled)

29. (New) A method, comprising:

speculating, based on a send packet, a connection that will subsequently have a receive packet to be processed in accordance with a transmission control protocol;

dynamically calculating a time when a protocol control block, associated with the speculated connection, is to be pre-fetched from an external memory unit, wherein the time is calculated in accordance with an estimated processing time associated with the send packet less an estimated latency time associated with pre-fetching the protocol control block from the external memory unit; and

arranging, in accordance with the dynamically calculated time, for a packet processing engine to pre-fetch from the external memory unit the protocol control block associated with the connection.

30. (New) The method of claim 29, further comprising:

dynamically adjusting, based on other packets that have been processed, at least one of:  
(i) the estimated round-trip time, or (ii) the estimated latency time.

31. (New) The method of claim 29, wherein said speculating is performed by the packet processing engine.

32. (New) The method of claim 29, wherein said speculating is performed by a host processor and said arranging comprises:

pushing the protocol control block from the external memory unit to the packet processing engine.

33. (New) The method of claim 29, wherein the packet processing engine is associated with a network interface card.

34. (New) A computer-readable storage medium having stored thereon instructions that when executed by a machine result in the following:

speculating, based on a send packet, a connection that will subsequently have a receive packet to be processed in accordance with a transmission control protocol,

dynamically calculating a time when a protocol control block, associated with the speculated connection, is to be pre-fetched from an external memory unit, wherein the time is calculated in accordance with an estimated processing time associated with the send packet less an estimated latency time associated with pre-fetching the protocol control block from the external memory unit, and

arranging, in accordance with the dynamically calculated time, for a packet processing engine to pre-fetch from the external memory unit the protocol control block associated with the connection.